

§ 18.41 Plug and receptacle-type connectors.

(a) Plug and receptacle-type connectors for use in by the last open crosscut in a gassy mine shall be so designed that insertion or withdrawal of a plug cannot cause incendive arcing or sparking. Also, connectors shall be so designed that no live terminals, except as hereinafter provided, are exposed upon withdrawal of a plug. The following types will be acceptable:

(1) Connectors in which the mating or separation of the male and female electrodes is accomplished within an explosion-proof enclosure.

(2) Connectors that are mechanically or electrically interlocked with an automatic circuit-interrupting device.

(i) *Mechanically interlocked connectors.* If a mechanical interlock is provided the design shall be such that the plug cannot be withdrawn before the circuit has been interrupted and the circuit cannot be established with the plug partially withdrawn.

(ii) *Electrically interlocked connectors.* If an electrical interlock is provided, the total load shall be removed before the plug can be withdrawn and the electrical energy in the interlocking pilot circuit shall be intrinsically safe, unless the pilot circuit is opened within an explosion-proof enclosure.

(3) Single-pole connectors for individual conductors of a circuit used at terminal points shall be so designed that all plugs must be completely inserted before the control circuit of the machine can be energized.

(b) Plug and receptacle-type connectors used for sectionalizing the cables outby the last open crosscut in a gassy mine need not be explosion-proof or electrically interlocked provided such connectors are designed and constructed to prevent accidental separation.

(c) Conductors shall be securely attached to the electrodes in a plug or receptacle and the connections shall be totally enclosed.

(d) Molded-elastomer connectors will be acceptable provided:

(1) Any free space within the plug or receptacle is isolated from the exterior of the plug.

(2) Joints between the elastomer and metal parts are not less than 1 inch

wide and the elastomer is either bonded to or fits tightly with metal parts.

(e) The contacts of all line-side connectors shall be shielded or recessed adequately.

(f) For a mobile battery-powered machine, a plug and receptacle-type connector will be acceptable in lieu of an interlock provided:

(1) The plug is padlocked to the receptacle and is held in place by a threaded ring or equivalent mechanical fastening in addition to a padlock. A connector within a padlocked enclosure will be acceptable; or,

(2) The plug is held in place by a threaded ring or equivalent mechanical fastening, in addition to the use of a device that is captive and requires a special tool to disengage and allow for the separation of the connector. All connectors using this means of compliance shall have a clearly visible warning tag that states: "DO NOT DIS-ENGAGE UNDER LOAD," or an equivalent statement; or,

(3) The plug is held in place by a spring-loaded or other locking device, that maintains constant pressure against a threaded ring or equivalent mechanical fastening, to secure the plug from accidental separation. All connectors using this means of compliance shall have a clearly visible warning tag that states: "DO NOT DIS-ENGAGE UNDER LOAD," or an equivalent statement.

[33 FR 4660, Mar. 19, 1968, as amended at 68 FR 37082, June 23, 2003]

§ 18.42 Explosion-proof distribution boxes.

(a) A cable passing through an outside wall(s) of a distribution box shall be conducted either through a packing gland or an interlocked plug and receptacle.

(b) Short-circuit protection shall be provided for each branch circuit connected to a distribution box. The current-carrying capacity of the specified connector shall be compatible with the automatic circuit-interrupting device.

(c) Each branch receptacle shall be plainly and permanently marked to indicate its current-carrying capacity and each receptacle shall be such that it will accommodate only an appropriate plug.